

## Claims

1. A Ziegler catalyst for preparing 1-olefin homopolymers and copolymers by polymerization of a 1-olefin of the formula  $R^4CH=CH_2$ , where  $R^4$  is hydrogen or an alkyl radical having from 1 to 10 carbon atoms, in suspension, in solution or in the gas phase, which catalyst comprises the reaction product of a magnesium alkoxide (component a) with a transition metal compound (component b) and an organometallic compound (component c) together with an additional component (d) comprising a compound of the chemical formula



where M is an element of main group IV of the Periodic Table, R is halogen or an organic radical such as alkyl having from 1 to 10 carbon atoms, oxyalkyl having from 1 to 10 carbon atoms, cycloalkyl having from 4 to 8 carbon atoms in the ring and, if desired, from 1 to 6 substituents  $R'$  on the ring, aryl having from 6 to 10 carbon atoms in the aromatic and, if desired, from 1 to 6 substituents  $R'$  on the aromatic, where  $R'$  is a halogen or an alkyl radical having from 1 to 4 carbon atoms or an OH group or an  $NO_2$  group or an oxyalkyl radical having from 1 to 4 carbon atoms, and x is an integer from 1 to 4.

2. A Ziegler catalyst as claimed in claim 1, wherein the radicals R in component (d) are identical and the element of main group IV of the Periodic Table present in component (d) is preferably silicon or germanium.
3. A Ziegler catalyst as claimed in claim 1, wherein the radicals R in component (d) are not identical and radicals R having various possible meanings are combined with one another and the element of main group IV of the Periodic Table present in component (d) is preferably silicon or germanium.
4. A Ziegler catalyst as claimed in one or more of claims 1 to 3, wherein component (a) is a magnesium alkoxide of the formula  $Mg(OR^1)(OR^2)$ , where